Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. **(currently amended)** A method of distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

using a first regulator module having an RM input and an RM output and being a self-contained assembly adapted to be installed as a unit at a first location to convert power from the input source at a source voltage, $V_{source}$, and deliver a controlled DC voltage, $V_f$, to a factorized bus;

~~using the factorized bus to carry power from the first regulator to a remote location separated by a distance from the first location;~~

using a voltage transformation module ("VTM") having a VTM input and a VTM output and being a self-contained assembly adapted to be installed as a unit at ~~the~~ a remote location to convert power, via a transformer, from the factorized bus at ~~an~~ a VTM input voltage $V_{in}$, ~~essentially equal to the voltage delivered to the bus, $V_f$,~~ to deliver a ~~DC~~ VTM output voltage, $V_{out}$, at an output current, $I_{out}$, the VTM having an essentially constant voltage gain, K, an output resistance, $R_{out}$, and a transfer function essentially equal to $V_{out} = K(V_{in}) - R_{out}(I_{out})$; and

~~using in the VTM an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current;~~

~~wherein the VTM has an output resistance, $R_{out}$; and~~

wherein the load is supplied with a voltage, $V_{load}$, essentially equal to the VTM output voltage ~~of the VTM~~, $V_{out}$, and the VTM output voltage, $V_{out}$, ~~which~~ is regulated by the first regulator ~~using~~ controlling the factorized bus voltage, $V_f$.

2. **(currently amended)** ~~A method of distributing power from an input source to a load, where the load may vary over a normal operating range,~~ The method of claim 1 further comprising:

~~using a first regulator at a first location to convert power from the input source at a source voltage, $V_{source}$, and deliver a controlled DC voltage, $V_f$, to a factorized bus;~~

~~using the factorized bus to carry power from the first regulator to a remote location separated by a distance from the first location;~~

~~using a voltage transformation module ("VTM") at the remote location to convert power from the factorized bus and deliver a load voltage, $V_{load}$, the VTM having an input for receiving an input voltage, $V_{in}$, essentially equal to the voltage delivered to the bus, $V_f$, and an output for delivering an output voltage, $V_{out}$, essentially equal to the load voltage, $V_{load}$, and an output resistance, $R_{out}$;~~

~~using a transformer in the power train of the VTM;~~

~~using in the VTM an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current;~~

using in the VTM ~~having~~ two or more power switches arranged in a bipolar drive circuit to drive the transformer and using a power conversion duty cycle greater than 80% to transfer power between the VTM input and the VTM output via the transformer.

3. **(currently amended)** The method of claim 1 ~~A method of distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:~~

~~using a first regulator at a first location to convert power from the input source at a source voltage, $V_{source}$, and deliver a controlled DC voltage, $V_f$, to a factorized bus;~~

~~using the factorized bus to carry power from the first regulator to a remote location separated by a distance from the first location;~~

~~using a voltage transformation module ("VTM") at the remote location to convert power from the factorized bus and deliver a load voltage, $V_{load}$,~~

wherein the VTM ~~having~~ includes two or more primary switches arranged in a bipolar drive circuit connected to drive ~~a~~ the transformer; and further comprising

~~, an input for receiving an input voltage, $V_{in}$, essentially equal to the bus voltage, $V_f$, and an output for delivering an output voltage, $V_{out}$, essentially equal to the load voltage, $V_{load}$; and~~

operating the primary switches in a series of converter operating cycles, each converter operating cycle characterized by

(a) two power transfer intervals of essentially equal duration, during which one or more of the primary switches are ON and power is transferred from the input to the output via the transformer, and

(b) two energy-recycling intervals during which the primary switches are OFF~~;~~
~~wherein the load voltage, $V_{load}$, is regulated by the first regulator using the factorized bus~~.

4. **(currently amended)** A method of ~~providing a~~ increasing power density ~~greater than 200 Watts/cubic inch~~ in point-of-load converters for ~~efficiently~~ supplying a regulated DC voltage, $V_{load}$, to a load, where the load may vary over a normal operating range, from an input source, the method comprising:

factorizing away from the point-of-load a power-conversion function of voltage regulation, wherein the factorizing comprises installing ~~by using~~ a first regulator module having an RM input and an RM output and being a self-contained assembly adapted to be installed as a unit, and using the first regulator module to convert power from the input source to a controlled voltage, $V_f$, delivered to a factorized bus;

localizing at the point-of-load a function of DC voltage transformation wherein the localizing comprises ~~by~~ installing a voltage transformation module ("VTM") at the point-of-load, the VTM having a VTM input and a VTM output and being a self-contained assembly adapted to be installed as a unit, and using the VTM to convert~~ing~~ the factorized bus voltage at the point-of-load, $V_{in}$, to an output voltage, $V_{out}$, essentially equal to $V_{load}$~~, with a voltage transformation module ("VTM")~~; and

adapting the VTM ~~to operate at or above 500 KHz,~~ to convert power via a transformer, and to provide an essentially constant DC voltage gain, K~~, = $V_{out}$ / $V_{in}$, at a load current,~~ and an output resistance, $R_{out}$, to deliver a VTM output voltage, $V_{out}$, at an output current, $I_{out}$, the VTM having a transfer function essentially equal to $V_{out} = K(V_{in}) - R_{out}(I_{out})$; and

regulating ~~the load voltage,~~ $V_{load}$, by controlling the voltage of the factorized bus, $V_f$.

5. **(currently amended)** The method of claim 1 wherein the using a VTM comprises: ~~A method for providing scalable electric power conversion capability in which power is converted~~

~~from an input source and delivered to a load at a regulated DC output voltage, where the load may vary over a normal operating range, the method comprising:~~

~~using a first regulator to convert power from the input source at a source voltage, $V_{source}$, to a controlled DC voltage, $V_f$, delivered to a factorized bus;~~

~~operating two~~ using two or more of the VTMs ~~voltage transformation modules ("VTMs), each VTM comprising a transformer and an output resistance $R_{out}$;~~ each having the same voltage gain K, their respective inputs connected in parallel, and their respective outputs connected in parallel to supply the load ~~convert power, via the transformers, from an input voltage, $V_{in}$, essentially equal to the factorized bus voltage, $V_f$, to a DC output voltage, $V_{out}$~~;

~~using an essentially constant voltage gain, $K = V_{out}/V_{in}$, at a load current, in each of the VTMs;~~

wherein the power provided to the load is shared by each respective VTM in inverse proportion to the output resistance ~~by~~ of each respective VTM ~~of the VTMs~~; and

the output voltage provided to the load, $V_{load}$, is essentially equal to ~~the output voltage of each of the VTMs, $V_{out}$,~~ the factorized bus voltage, $V_f$, multiplied by K, and is regulated by the first regulator using the factorized bus voltage, $V_f$.

6. (original) The method of claim 1 further comprising

controlling the controlled bus voltage, $V_f$, using a feedback signal derived from the load voltage, $V_{load}$.

7. (original) The method of claim 1 further comprising using the VTM transformer to galvanically isolate the load from the factorized bus.

8. (original) The method of claim 1 further comprising a plurality of VTMs connected to the factorized bus.

9. (original) The method of claim 1 further comprising a plurality of VTMs connected to the factorized bus and operating in parallel to share the power delivered to the load.

10. (original) The method of claim 9 wherein the VTMs are distributed over a multiplicity of locations.

11. (original) The method of claim 1 further comprising

programming the load voltage, $V_{load}$, to a selected value by using a feedback signal to control the factorized bus voltage, $V_f$.

12. (original) The method of claim 1 further comprising

using an output switch in series with the output of the VTM to selectively connect the VTM to the load; and

operating the output switch to protect the load from a fault within the VTM;

wherein the load voltage is protected from VTM faults.

13. (original) The method of claim 1 further comprising

using an input switch in series with the input of the VTM to selectively connect the VTM to the factorized bus; and

operating the input switch to protect the factorized bus from a fault within the VTM;

wherein the factorized bus voltage is protected from VTM faults.

14. (original) The method of claim 1 further comprising

using an input device in series with the input of the VTM to selectively connect the VTM to the factorized bus; and

operating the input device to limit the voltage applied to the VTM;

wherein the VTM is protected from the factorized bus voltage.

15. **(currently amended)** The method of claim 1 further comprising:

using a front end converter at a first location to convert power from the input source and deliver a DC voltage, $V_{bus}$, to a first bus;

using a power regulator module ("PRM") at a second location~~, separated from the first location by a distance,~~ to convert the DC voltage from the first bus and deliver the controlled DC voltage, $V_f$, to the factorized bus;

wherein the first regulator comprises the front end converter and the PRM.

16. (original) The method of claim 15 further comprising

controlling the PRM to adjust the factorized bus voltage, $V_f$, by using a feedback signal derived from the load voltage, $V_{load}$.

17. (original) The method of claim 3 wherein the VTM uses a power conversion duty cycle greater than 80 per cent over the normal operating range.

18. (**currently amended**) A method of distributing electrical power in a vehicle comprising:

~~the method of claim 1 wherein:~~

using a ~~the~~ first regulator ~~is~~ located at a first location near a source of power in the vehicle to convert power from the source at a source voltage, $V_{source}$, and deliver, at an output of the first regulator, a controlled DC voltage, $V_f$, to a factorized bus;

using the factorized bus to distributes the controlled DC voltage, $V_f$, to a plurality of locations throughout the vehicle;

using a plurality of voltage transformation modules ("VTMs") ~~VTMs are~~ distributed throughout the vehicle to provide power to loads distributed throughout the vehicle;

each VTM having a VTM input and a VTM output, each VTM being a self-contained assembly adapted to be installed as a unit at a remote location to convert power, via a transformer, from the factorized bus at a VTM input voltage $V_{in}$, to deliver a VTM output voltage, $V_{out}$, at an output current, $I_{out}$, and each VTM having an essentially constant voltage gain, K, an output resistance, $R_{out}$, and a transfer function essentially equal to $V_{out} = K (V_{in}) - R_{out} (I_{out})$;

wherein each load is supplied with a respective voltage, $V_{load}$, essentially equal to the respective VTM output voltage, $V_{out}$.

19. (**currently amended**) Apparatus for distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:

a first regulator module ~~at a first location~~ having a first input and a first output and being a self-contained assembly adapted to be installed as a unit at a first location and~~, the first regulator module~~ having circuitry adapted to convert power received from the input source via the first input at a source voltage, $V_{source}$, and deliver a controlled DC voltage, $V_f$, to the first output;

a factorized bus connected to the first output of the first regulator and extending to a remote location ~~separated by a distance from the first location~~; and

a voltage transformation module ("VTM") having a VTM input and a VTM output and being a self-contained assembly adapted to be installed as a unit at the remote location and having circuitry, including a transformer, adapted to convert power from the factorized bus at a VTM ~~an~~ input voltage, $V_{in}$, ~~essentially equal to the voltage delivered to the bus, $V_f$,~~ to deliver a ~~DC~~ VTM output voltage, $V_{out}$, at an output current, $I_{out}$, the VTM having an essentially constant voltage gain, K, an output resistance, $R_{out}$, and a transfer function essentially equal to $V_{out} = K (V_{in}) - R_{out} (I_{out})$;

~~the VTM having an essentially constant voltage gain, K, = $V_{out}$ / $V_{in}$, at a load current and having an output resistance, $R_{out}$~~;

wherein the load is supplied with a voltage, $V_{load}$, essentially equal to the VTM output voltage, $V_{out}$, and the VTM output voltage, $V_{out}$, is regulated by controlling ~~the first regulator using~~ the factorized bus voltage, $V_f$.

20. **(currently amended)** The apparatus of claim 19 wherein: ~~Apparatus for distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:~~

~~a first regulator at a first location having a first input and a first output, the first regulator having circuitry adapted to convert power from the input source at a source voltage, $V_{source}$, and deliver a controlled DC voltage, $V_f$, to the first output;~~

~~a factorized bus connected to the first output of the first regulator and extending to a remote location separated by a distance from the first location;~~

~~a voltage transformation module ("VTM") at the remote location having circuitry, including a transformer, adapted to convert power from the factorized bus and deliver a load voltage, $V_{load}$, the VTM having an input for receiving an input voltage, $V_{in}$, essentially equal to the voltage delivered to the bus, an output for delivering an output voltage, $V_{out}$, essentially equal to the load voltage, $V_{load}$, an essentially constant voltage gain, K = $V_{out}$ / $V_{in}$, at a load current, and an output resistance, $R_{out}$;~~

the VTM further comprises ~~comprising~~ two or more power switches arranged in a bipolar drive circuit to drive the transformer and a power conversion duty cycle greater than 80% to transfer power from the VTM input to the VTM output via the transformer over the normal operating range.

21. **(currently amended)** The apparatus of claim 19 wherein the VTM further comprises: ~~Apparatus for distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:~~

~~a first regulator at a first location having a first input and a first output, the first regulator having circuitry adapted to convert power from the input source at a source voltage, $V_{source}$, and deliver a controlled DC voltage, $V_f$, to the first output;~~

~~a factorized bus connected to the first output of the first regulator and extending to a remote location separated by a distance from the first location;~~

~~a voltage transformation module ("VTM") at the remote location and having an input for receiving a DC input voltage, $V_{in}$, essentially equal to the voltage delivered to the bus, $V_f$;~~

two or more primary switches arranged in a bipolar drive circuit connected to drive a transformer with power received from the VTM input~~, an output for delivering a DC output voltage, $V_{out}$, an output resistance, $R_{out}$,~~ ; and

a switch controller adapted to operate the primary switches in a series of converter operating cycles, each converter operating cycle characterized by

(a) two power transfer intervals of essentially equal duration, during which one or more of the primary switches are ON and power is transferred from the VTM input to the VTM output via the transformer, and

(b) two energy-recycling intervals during which the primary switches are OFF~~;~~ ~~wherein the load is supplied with a voltage, $V_{load}$, essentially equal to the output voltage, $V_{out}$, and regulated by the first regulator using the factorized bus~~.

22. **(currently amended)** Apparatus for converting power at a point-of-load from a factorized bus driven by a source of controlled DC voltage, $V_f$, for delivering a regulated DC

voltage, $V_{load}$, to a load where the load may vary over a normal operating range, the apparatus comprising:

a voltage transformation module ("VTM") having ~~an enclosure for housing~~ power conversion circuitry, an input terminal, and an output terminal and being a self-contained assembly adapted to be installed as a unit at the point-of-load;

the power conversion circuitry comprising:

an input connected to the input terminal and adapted to receive a DC input voltage, $V_{in}$, from the factorized bus ~~essentially equal to $V_f$~~;

an output connected to the output terminal and adapted to deliver a DC output voltage, $V_{out}$, essentially equal to $V_{load}$, at an output current, $I_{out}$;

a transformer;

two or more primary switches arranged in a bipolar drive circuit connected to drive the transformer with power received from the input; and

a controller adapted to operate the primary switches in a series of converter operating cycles, each converter operating cycle characterized by

(a) two power transfer intervals of essentially equal duration during which one or more of the primary switches are ON and power is transferred from the input to the output via the transformer, and

(b) two energy-recycling intervals during which the primary switches are OFF; ~~and~~

~~(c) a period less than 2 micro-seconds;~~

wherein the VTM has ~~a power density greater than 250 Watts/cubic inch,~~ an essentially constant DC voltage gain, K, ~~$= V_{out}/V_{in}$, at a load current, and~~ an output resistance, $R_{out}$, and a transfer function essentially equal to $V_{out} = K (V_{in}) - R_{out} (I_{out})$ ~~regulates the load voltage, $V_{load}$, as a fraction, K, of the factorized bus voltage, $V_f$.~~

23. **(currently amended)** Apparatus for providing scalable electric power conversion capability in which power is converted from a factorized bus driven by a voltage source of

controlled DC voltage, $V_f$, and delivered to a load at a regulated DC output voltage, $V_{load}$, where the load may vary over a normal operating range, the apparatus comprising:

two or more voltage transformation modules ("VTMs") ~~connected in parallel,~~ each ~~VTM~~ having

(a) an input adapted to receive a DC input voltage, $V_{in}$, from the factorized bus ~~essentially equal to $V_f$~~;

(b) an output adapted to deliver an output voltage, $V_{out}$, essentially equal to $V_{load}$;

(c) a transformer;

(d) two or more primary switches arranged in a bipolar drive circuit connected to drive the transformer with power received from the input; and

(e) a controller operating the primary switches in a series of converter operating cycles;

(f) an essentially constant voltage gain K ~~= $V_{out}/V_{in}$ at a load current~~; and

(g) an output resistance, $R_{out}$;

wherein each VTM is a self-contained assembly adapted to be installed as a unit;

wherein the outputs of the two or more VTMs are connected in parallel; and

wherein the power delivered to the load is shared by each VTM connected in parallel in inverse proportion to the output resistance of each VTM~~; and~~

~~the output voltage supplied to the load, $V_{load}$, is essentially equal to the output voltage, $V_{out}$, of each of the VTMs and is regulated by the factorized bus voltage $V_f$.~~

24. (original) The apparatus of claim 19 further comprising a feedback controller for adjusting the voltage, $V_f$, of the factorized bus using a feedback signal derived from the load voltage, $V_{load}$.

25. (original) The apparatus of claim 19 wherein the VTM further comprises galvanic isolation from the input to the output.

26. (original) The apparatus of claim 19 further comprising a plurality of VTMs connected to the factorized bus.

27. **(currently amended)** The apparatus of claim 19 further comprising a plurality of VTMs, wherein the VTM inputs are connected to the factorized bus and the VTM outputs are connected ~~operating~~ in parallel to share the power delivered to the load.

28. (original) The apparatus of claim 26 wherein the VTMs are distributed over a multiplicity of locations.

29. (original) The apparatus of claim 19 further comprising an output controller for adjusting the voltage, $V_f$, of the factorized bus to program the load voltage, $V_{load}$, to a selected value.

30. (original) The apparatus of claim 19 further comprising

an output switch connected in series between the output of the VTM and the load; and an output switch controller adapted to detect a normal state and a fault state of the VTM and operate the output switch in its ON and OFF states;

wherein the VTM is disconnected from the load in the event of a fault state.

31. (original) The apparatus of claim 19 further comprising

an input switch connected in series between the input of the VTM and the load; and

an input switch controller adapted to detect a normal state and a fault state of the VTM and operate the input switch in its ON and OFF states;

wherein the VTM is disconnected from the factorized bus in the event of a fault state.

32. (previously presented) The apparatus of claim 19 further comprising

an input device connected in series between the input of the VTM and the load; and

an input switch controller adapted to detect the factorized bus voltage and operate the input device to limit the voltage applied to the VTM;

wherein the VTM is protected from the factorized bus voltage.

33. (original) The apparatus of claim 22 wherein the VTM operates at a greater than 90 per cent power conversion duty cycle over the normal operating range.

34. (original) The apparatus of claim 19 wherein

the first regulator further comprises a front end converter and a power regulator module ("PRM");

the front end converter being situated at a first location and having an input connected to receive power from the input source, having an output connected to a first bus, and being adapted to convert power from the input source and deliver a DC voltage to the first bus; and

the PRM being located at a second location and having an input connected to the first bus, having an output connected to the factorized bus, and being adapted to convert power from the first bus and deliver the controlled DC voltage, $V_f$, to the factorized bus.

35. (original) The apparatus of claim 30 further comprising a feedback controller for adjusting the voltage, $V_f$, of the factorized bus using a feedback signal derived from the load voltage, $V_{load}$, and applied to the PRM.

36. (original) The apparatus of claim 19 wherein:

the VTM further comprises secondary switches to rectify power from the transformer; and

the secondary switches are turned ON and OFF essentially at times of zero voltage.

37. (original) The apparatus of claim 19 wherein the VTM further comprises secondary switches to rectify power from the transformer; and

the secondary switches are turned ON and OFF essentially at times of zero current.

38. (original) The apparatus of claim 19 further comprising a feedback controller for increasing the output resistance, $R_{out}$ of the VTM using a feedback signal related to the output current, $I_{out}$ of the VTM.

39. (original) The apparatus of claim 19 further comprising a feedback controller for decreasing the output resistance, $R_{out}$ of the VTM using a feedback signal related to the output current, $I_{out}$ of the VTM.

40. (original) The method of claim 1 or apparatus of claim 19 wherein the first regulator comprises a buck-boost switching regulator.

41. (original) The method of claim 1 or apparatus of claim 19 wherein the first regulator comprises a buck-boost ZVS regulator.

42. (original) The method of claim 15 or apparatus of claim 34 wherein the PRM comprises a buck-boost switching regulator.

43. (original) The method of claim 15 or apparatus of claim 34 wherein the PRM comprises a buck-boost ZVS regulator.

44. (previously presented) The method of claim 1 further comprising providing a load assembly, wherein the remote location and the load are located within the load assembly and the first location is located outside of the load assembly.

45. (previously presented) The method of claim 4 further comprising providing a load assembly, wherein the load and the VTM are located within the load assembly and the first regulator is located outside of the load assembly.

46. (previously presented) The method of claim 5 further comprising providing a load assembly, wherein the load and the two or more VTMs are located within the load assembly and the first regulator is located outside of the load assembly.

**Please cancel claims 47-54 without prejudice.**

47-54. (cancelled).

55. (previously presented) The method of claim 44 wherein the load assembly comprises a printed circuit board ("PCB"), the remote location is on the PCB, and the VTM is mounted to the PCB.

56. (previously presented) The method of claim 45 wherein the load assembly comprises a printed circuit board ("PCB") and the VTM is mounted to the PCB.

57. (previously presented) The method of claim 46 wherein the load assembly comprises a printed circuit board ("PCB") and the two or more VTMs are mounted to the PCB.

58. (previously presented) The method of claim 1 further comprising providing a subassembly wherein the first regulator is located within the subassembly and the VTM is mounted outside of the subassembly.

59. (previously presented) The method of claim 5 further comprising providing a subassembly, wherein the first regulator is located within the subassembly and the two or more VTMs are mounted outside of the subassembly.

60. (previously presented) The method of claim 1 further comprising providing a first subassembly and a load subassembly, wherein the first regulator is located within the first subassembly, the load and the VTM are located within the load subassembly, and the first subassembly is separate from the load subassembly.

61. (previously presented) The method of claim 5 further comprising providing a first subassembly and a load subassembly, wherein the first regulator is located within the first subassembly, the load and the two or more VTMs are located within the load subassembly, and the first subassembly is separate from the load subassembly.

**Please cancel claims 62-65 without prejudice.**

62-65. (cancelled).

66. (previously presented) The apparatus of claim 19 further comprising a load assembly, wherein the VTM and the load are mounted within the load assembly and the first regulator is mounted outside of the load assembly.

67. (previously presented) The apparatus of claim 66 wherein the load assembly further comprises a printed circuit board ("PCB") and the VTM is mounted to the PCB.

**Please cancel claims 68-70 without prejudice.**

**68-70. (cancelled)**

71. (previously presented) The apparatus of claim 19 wherein the first regulator is mounted to a subassembly and the VTM is mounted outside of the subassembly.

72. (previously presented) The apparatus of claim 19 wherein the first regulator is mounted to a first subassembly, the load and the VTM are mounted to a load subassembly, and the first subassembly is separate from the load subassembly.

**Please cancel claims 73-74 without prejudice.**

**73-74. (cancelled).**

75. (previously presented) The apparatus of claim 22 wherein the power conversion circuitry comprises exactly one transformer for converting power from the input for delivery to the output.

76. **(currently amended)** A method of increasing circuit density in an electronic system comprising:

distributing power to a load assembly at a DC voltage, $V_f$, that is N times a voltage, $V_{load}$, required by load circuitry on the load assembly;

providing a voltage transformation module ("VTM") having an input for receiving the DC voltage, $V_f$ and an output for delivering the voltage, $V_{load}$, the VTM being a self contained assembly adapted to be installed as a unit on the load assembly and providing voltage transformation from the input to the output at an essentially constant voltage gain, K= 1/N, using a power transformer excited by a bipolar drive circuit;

mounting the VTM on the load assembly and using the VTM to supply power to the load circuitry ~~using a power transformer excited by a bipolar drive circuit~~; and

~~packaging the voltage transformation in a VTM package;~~

providing voltage control of the DC voltage, $V_f$ external to the VTM to regulate $V_{load}$~~;~~

~~and~~

~~packaging the voltage control physically separate from the VTM package~~.

77. (previously presented) The method of claim 76 further comprising enhancing the power density of the voltage transformation by using a power conversion duty cycle greater than 80%, and balanced switching cycles.

78. (previously presented) The method of claim 76 wherein the VTM package comprises a height less than or equal to 0.2 inches.

79. (previously presented) The method of claim 76 wherein the VTM package is overmolded.

80. (previously presented) The method of claim 76 wherein N is greater than 10.

**Please cancel claim 81 without prejudice.**

**81. (cancelled).**

82. **(currently amended)** The method of claim ~~81 further~~ 1 wherein ~~N is greater~~ K is less than or equal to 1/10.

83. **(currently amended)** The method of claim ~~81~~ 1 further comprising providing a low profile printed circuit board ("PCB") assembly including the load ~~circuit~~ and the VTM ~~package~~.

84. **(currently amended)** The method of claim ~~81~~ 1, 2, 3, 4, 5, or 18 wherein the VTM ~~package~~ comprises an overmolded package.

85. **(currently amended)** A method of distributing power to a plurality of loads each having a respective DC voltage level and tolerance requirements, comprising:

providing a plurality of voltage transformation modules ("VTMs") at points of load, each VTM being a self-contained assembly adapted to be installed as an individual unit, to receive power via a respective VTM input at a VTM input voltage, $V_{in}$, to deliver power via a respective VTM output at a VTM output voltage, $V_{out}$, at an output current, $I_{out}$, to a respective load, and to provide galvanic isolation and DC voltage transformation between the respective VTM input and the respective VTM output, each VTM having a transfer function essentially equal to $V_{out} = K (V_{in}) - R_{out} (I_{out})$ wherein K is an essentially constant voltage gain and $R_{out}$ is an output resistance;

unifying power distribution requirements using the respective voltage gain of each ~~a plurality of~~ VTM~~s~~ to transform the respective DC voltage level requirements of the respective load into a common voltage level;

distributing power at essentially the common voltage level to the VTMs inputs for delivery to the respective loads; and

controlling the ~~unified~~ common voltage to satisfy the DC voltage tolerance~~s~~ requirements of the plurality of loads.

86. **(currently amended)** A method of distributing power in a system comprising:

providing a first point-of-load ("POL") converter, the first POL converter being a self-contained assembly adapted to be installed as an individual unit, to receive power via a first POL input at a DC input voltage, $V_{in}$, to deliver power via a first POL output at a DC output voltage, $V_{out1}$, to convert power received from a bus over a normal operating input voltage range for delivery to a first load at a first load voltage;

~~enhancing a power density of the first POL converter by optimizing the first POL converter for a predetermined fixed input voltage,~~ providing the first POL converter with a transfer function essentially equal to $V_{out1} = K1\ (V_{in}) - R_{out1}\ (I_{out1})$ wherein K1 is a fixed voltage gain, $R_{out1}$ is an output resistance of the first POL converter, and $I_{out1}$ is the output current of the first POL converter, ~~$K1 = V_{out1}/V_{in}$;~~ and using a bipolar drive circuit with balanced switch cycles to drive a power transformer using a power conversion duty cycle greater than 80%;

selecting ~~a~~ the voltage gain K1 for the first POL converter to deliver the first load voltage from a first bus voltage; and

controlling the first bus voltage to satisfy a voltage tolerance set by the first load.

87. (**currently amended**) The method of claim 86 further comprising:

providing a second POL converter, the second POL converter being a self-contained assembly adapted to be installed as an individual unit, to receive power via a second POL input at a DC input voltage, $V_{in}$, to deliver power via a second POL output at a DC output voltage, $V_{out2}$, to convert power received from the bus over a normal operating input voltage range for delivery to a second load at a second load voltage;

~~enhancing a power density of the second POL converter by optimizing the second POL converter for a predetermined fixed input voltage,~~ providing the second POL converter with a transfer function essentially equal to $V_{out2} = K2\ (V_{in}) - R_{out2}\ (I_{out2})$ wherein K2 is a fixed voltage gain, $R_{out1}$ is an output resistance of the second POL converter, and $I_{out2}$ is the output current of the second POL converter, ~~$K2 = V_{out2}/V_{in}$;~~ and using a bipolar drive circuit with balanced switch cycles to drive a power transformer using a power conversion duty cycle greater than 80%; and

selecting ~~a~~ the voltage gain, K2, for the second POL converter to deliver the second load voltage from the first bus voltage.

88. (previously presented) The method of claim 86 wherein

the first POL converter comprises a plurality of POL converters,

the first load comprises a plurality of loads,

the first load voltage comprises a plurality of load voltages; and

the selecting a voltage gain comprises selecting respective voltage gains for each of the plurality of POL converters to unify voltage requirements on the first bus.

89. **(currently amended)** The method of claim 1 further comprising: ~~A method of distributing power from an input source to a load on a load assembly, where the load may vary over a normal operating range, comprising:~~

~~using a first regulator to convert power from the input source at a source voltage, $V_{source}$, and deliver a controlled DC voltage, $V_f$, to a factorized bus;~~

using a load subassembly to support the load and the VTM;

using the factorized bus to carry power from the RM output ~~first regulator~~ to the VTM input ~~of a voltage transformation module ("VTM")~~ on the load assembly~~, wherein the first regulator is separated by a distance from the VTM~~;

~~using~~ wherein the VTM comprises ~~to convert power from the factorized bus at an input voltage, $V_{in}$, essentially equal to the voltage delivered to the bus, $V_f$, to a DC output voltage, $V_{out}$, via at least one transformer and using~~ two switches connected to drive the transformer ~~in the VTM~~, the two switches being turned on alternately during alternating non-overlapping time periods during which power is transferred ~~from~~ between the VTM input ~~of the VTM to an~~ and the VTM output ~~of the VTM~~ via the transformer; and

~~using in the VTM an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current; and~~

wherein ~~the load is supplied with a voltage, $V_{load}$, essentially equal to~~ the output voltage of the VTM, $V_{out}$, ~~which~~ is regulated by the first regulator using the factorized bus.

**Please cancel claim 90 without prejudice.**

**90. (cancelled).**

91. **(currently amended)** The method of claim 1 further comprising: ~~A method of distributing power from an input source to a load, where the load may vary over a normal operating range, comprising:~~

~~using a first regulator to convert power from the input source at a source voltage, $V_{source}$, and deliver a controlled DC voltage, $V_f$, to a factorized bus;~~

using the factorized bus to carry power from the RM output ~~first regulator~~ to the VTM input ~~of a voltage transformation module ("VTM")~~; and

~~using the VTM to convert power, via a transformer, from the factorized bus at an input voltage, $V_{in}$, essentially equal to the voltage delivered to the bus, $V_f$, to a DC output voltage, $V_{out}$, using an essentially constant voltage gain, $K = V_{out} / V_{in}$, at a load current and~~

wherein the VTM comprises an ~~essentially resistive~~ output impedance which is essentially resistive over a bandwidth approaching an operating frequency of the VTM~~;~~

~~wherein the load is supplied with a voltage, $V_{load}$, essentially equal to the output voltage of the VTM, $V_{out}$, which is regulated by the first regulator using the factorized bus; and~~

~~wherein the VTM is enclosed in a package that excludes the first regulator~~.

Please add the following new claims:

92. **(New)** A method of distributing power in electronic equipment comprising

receiving power from an input source over a normal input operating range of voltages including a minimum input voltage and a maximum input voltage;

converting power received from the input source for delivery to load circuitry, wherein the converting power comprises a first power processing stage and a second power processing stage, the second power processing stage receiving power processed by the first power processing stage;

the first power processing stage being provided in a first self-contained module assembly adapted to be installed as an individual unit and adapted to receive power from the source via a first-module input and deliver power via a first-module output at a controlled DC voltage, $V_f$, regulated to stay within a predetermined control range, the first power processing stage providing voltage regulation;

the second power processing stage being provided in a second self-contained module assembly adapted to be installed as an individual unit and adapted to receive power via a second-module input at a DC input voltage, $V_{in}$, and deliver power to the load circuitry at a DC output

voltage, $V_{out}$, at an output current, $I_{out}$, via a second-module output using a transfer function essentially equal to $V_{out} = K (V_{in}) - R_{out} (I_{out})$ wherein K is an essentially constant voltage gain and $R_{out}$ is an output resistance, the second power processing stage providing galvanic isolation and providing DC voltage transformation; and

bussing the controlled DC voltage from the first module output of the first stage to the second module input of the second stage.

93. **(New)** The method of claim 92 wherein

the normal input operating range of voltages comprises a first tolerance expressed as a maximum variation in percent from a nominal input voltage value;

the predetermined control range comprises a second tolerance expressed as a maximum variation in percent from a nominal value for $V_f$;

the load requires the load voltage to remain within a third tolerance expressed as a maximum variation in percent from a nominal value for $V_{load}$;

the second tolerance is less than or equal to the third tolerance; and

the second tolerance is less than the first tolerance.

94. **(New)** The method of claim 18 wherein the loads comprise a plurality of load assemblies to which a respective one or more of the plurality of VTMs is mounted and supplies power.